

### MODEL PAPER MATHEMATICS ELECTIVE CLASS 9

**NOTE:** Attempt all questions of Section-A by filling the corresponding bubble on the MCQs RESPONSE SHEET. It is mandatory to return the attempted MCQs sheet to the superintendent within given time.

Q1: Choose the correct option.

Allowed time 20 minutes

Marks 15

1. The matrix  $\begin{bmatrix} 2 & 0 \\ 0 & 2 \end{bmatrix}$  is \_\_\_\_\_ matrix  
a) identity      b) scalar      c) row      d) null
2. The number  $\pi$  is \_\_\_\_\_ number  
a) rational      b) irrational      c) imaginary      d) both rational and irrational
3. If  $Z = 5-6i$  the conjugate of  $Z$  is  
a)  $5+6i$       b)  $-5+6i$       c)  $-5-6i$       d)  $5-6i$
4. Base of common log is  
a) 0      b) 5      c) 2      d) 10
5.  $A$  is skew symmetric if  $A^t =$  \_\_\_\_\_  
a)  $A$       b)  $A^t$       c)  $-A$       d)  $-A^t$
6. The additive inverse of  $\sqrt{3}$  is \_\_\_\_\_  
a)  $-\sqrt{3}$       b)  $\frac{1}{\sqrt{3}}$       c)  $\sqrt{-3}$       d)  $-3$
7. Additive identity of real numbers  $R$  is  
a) 0      b) 1      c)  $-1$       d)  $R$
8. For any value of  $x$ ,  $x^1$  is = \_\_\_\_\_  
a) 0      b) 1      c)  $-1$       d)  $x$
9.  $(a+b)^2 + (a-b)^2 =$  \_\_\_\_\_  
a)  $4ab$       b)  $2(a^2+b^2)$       c)  $a^2-2ab+b^2$       d)  $a^4-b^4$
10. L.C.M = \_\_\_\_\_  
a)  $\frac{A}{H.C.F}$       b)  $\frac{A \times B}{H.C.F}$       c)  $\frac{H.C.F}{A \times B}$       d)  $\frac{B}{H.C.F}$
11. The solution set of  $\sqrt{7x+2} - 3 = 2$  is  
a)  $\frac{23}{7}$       b)  $-\frac{23}{7}$       c) 2      d) 7
12. The point  $(2, -3)$  is located in  
a) Quadrant I      b) Quadrant II      c) Quadrant III      d) Quadrant IV
13. For all  $a, b \in R$ , if  $a=b$  then  $b=a$  is \_\_\_\_\_ property  
a) reflexive      b) transitive      c) symmetric      d) additive
14. Factors of  $x^2+2x-24$  are  
a)  $x+4, x-6$       b)  $x-4, x+6$       c)  $x+3, x-8$       d)  $x+8, x-3$
15. Evaluate the determinant of matrix  $\begin{bmatrix} 5 & 2 \\ -1 & 6 \end{bmatrix}$   
a) 32      b) -32      c) 28      d) -28

### Section – B

Q1: Attempt any 9 of the following.

Allowed time 2 hours 40 minutes

Maximum Marks 36

- i. If  $A = \begin{bmatrix} 2 & 1 \\ 0 & 7 \end{bmatrix}$  and  $B = \begin{bmatrix} -5 & 7 \\ 9 & 2 \end{bmatrix}$  are matrices show that  $A+B=B+A$
- ii. Find the product  $(a-1)(a^2+a+1)$
- iii. Factorize  $4x^4+81$
- iv. Divide  $Z_1=2+3i$ , by  $Z_2=5-i$
- v. If  $x = \sqrt{3} - \sqrt{2}$ , find the values of  $x - \frac{1}{x}$
- vi. Find L.C.M by factorization of  $x+y, x^2-y^2$
- vii. Sum of three consecutive integers is 39, find the integers
- viii. Find the solution set of the equation  $6x-5=2x+9$
- ix. Show that A (-1, 2), B (7, 5) and C(2,6) are the vertices of scalene triangle
- x. Prove that  $\log_b pq = \log_b p + \log_b q$
- xi. If two angles of a triangle are congruent then the sides opposite to them are also congruent.
- xii. Prove that each diagonal of a parallelogram divides it into two congruent triangles.

### Section – C

Attempt any 4 of the following.

Maximum Marks: 24

- Q2. The bisectors of angles of triangle are concurrent.
- Q3. The lengths of two sides of triangle are 11 and 23 and the length of third side is X. Find the range of possible values of X.
- Q4. If a line segment intersects the two sides of a triangle in the same ratio then it is parallel to third side.
- Q5. In a right-angled triangle, the square of the length of hypotenuse is equal to the sum of the squares of the lengths of the other two sides.
- Q6: Construct triangle **KML** when length of its two sides **ML** and **KM** are 5.4 cm and 3.1 cm respectively and  $m \angle M = 105^\circ$
- Q7: Parallelogram on the same base and lying between the same parallel lines (or of the same altitude) are equal in area.